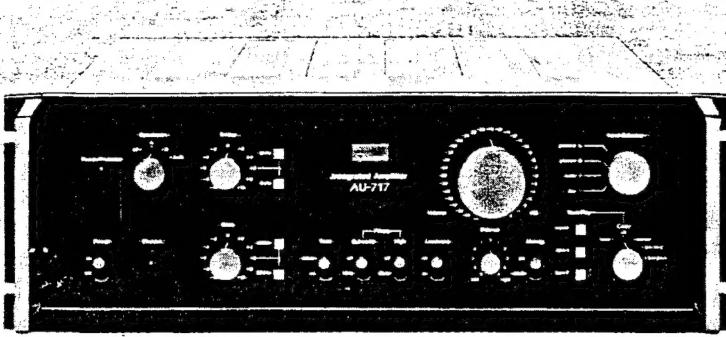


# SERVICE MANUAL

INTEGRATED STEREO AMPLIFIER

## SANSUI AU-517/717



### SPECIFICATIONS

#### AU-517

<b>Power output</b>	W
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.025% total harmonic distortion	
65 watts per channel into 8 ohms	
<b>Load impedance</b>	8 ohms
20 to 20,000 Hz at or below rated min. RMS power output and total harmonic distortion	
<b>Total harmonic distortion (POWER AMP IN)</b>	less than 0.025% at or below rated min. RMS power output
intermodulation distortion (70 Hz:7 kHz = 4:1 SMPTE method)	less than 0.025%
<b>Frequency response (at 1 watt) (POWER AMP IN)</b>	0 to 200,000 Hz +0 dB -3 dB
<b>RIAA curve deviation (PHONO)</b>	+0.2 dB -0.2 dB (20 to 20,000 Hz)
<b>Damping factor</b>	approximately 60, at 8 ohms load
<b>Input sensitivity and impedance (1 kHz, for rated power output)</b>	
PHONO	2.5 mV/47 kilohms
(Max. input capability: 320 mV at 1 kHz, less than 0.01% harmonic distortion)	
AUX, TAPE	150 mV/47 kilohms
<b>Output level (1,000 Hz)</b>	
TAPE REC (pin jack)	-150mV/47 kilohms
PRE OUT	+1V/47 kilohms
<b>Channel separation (1 kHz, at rated power output)</b>	
PHONO	better than 60 dB
AUX	better than 65 dB
<b>Hum and noise (short-circuit, A-network)</b>	
PHONO	<78 dB
AUX	<100 dB
<b>Controls</b>	
BASS	+10 dB (50 Hz)
TREBLE	+10 dB (15 kHz)
SUBSONIC FILTER	-3 dB (16 Hz), 6 dB/oct
LOUDNESS (-30 dB)	9 dB at 50 Hz 7 dB at 10 kHz

#### Power requirements

<b>Power voltage</b>	100, 120, 220, 240V (50/60Hz)
	120V (Usable 110 - 130V)
	60 Hz (for U.S.A. & Canada only)
<b>Power consumption</b>	
Maximum consumption	660 watts
Rated consumption	345 watts 420 VA
<b>Dimensions</b>	
	430 mm (16-15/16") W
	168 mm (6-5/8") H
	389 mm (15 3/8") D
<b>Weight</b>	
	16.5 kg (36.4 lbs) net
	18.5 kg (40.8 lbs) packed

\* Design and specifications subject to change without notice for improvements.

**Sansui**

SANSUI ELECTRIC CO., LTD.

# 1. SPECIFICATIONS

AU-717

**Power output**

Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.025% total harmonic distortion  
85 watts per channel into 8 ohms

**Load impedance**

8 ohms

**Power bandwidth**

20 to 20,000 Hz at or below rated min. RMS power output and total harmonic distortion

**Total harmonic distortion (POWER AMP IN)**

less than 0.025% at or below rated min. RMS power output

**Intermodulation distortion (70 Hz: 7 kHz = 4:1 SMPTE method)**

less than 0.025%

**Frequency response (at 1 watt) (POWER AMP IN)**

0 to 200,000 Hz +0 dB -3 dB

**RIAA curve deviation (PHONO)**

+0.2 dB -0.2 dB

(20 to 20,000 Hz)

**Damping factor**

approximately 60 at 8 ohms load

**Input sensitivity and impedance (1 kHz, for rated power output)**

PHONO . . . . . 2.5 mV/47 kilohms

(Max. Input capability; 350 mV at 1 kHz, less than 0.01% total harmonic distortion)

AUX, TAPE . . . . . 150 mV/47 kilohms

**Output level (1,000 Hz)**

TAPE REC (pin jack) . . . . . 150 mV/47 kilohms

PRE OUT . . . . . 1 V/47 kilohms

**Channel separation (1 kHz, at rated power output)**

PHONO . . . . . better than 60 dB

AUX . . . . . better than 65 dB

**Hum and noise (short-circuit, A-network)**

PHONO . . . . . 78 dB

AUX . . . . . 100 dB

**Controls**

BASS . . . . . ±10 dB (50 Hz)

Tone selector . . . . . 200, 400 Hz

TREBLE . . . . . ±10 dB (15 kHz)

Tone selector . . . . . 3, 6 kHz

SUBSONIC FILTER . . . . . -3 dB (16 Hz), 6 dB/oct

HIGH FILTER . . . . . -3 dB (10 kHz), 6 dB/oct

MUTING . . . . . -20 dB

LOUDNESS (-30 dB) . . . . . 9 dB at 50 Hz

7 dB at 10 kHz

**Power requirements**

Power voltage . . . . . 100, 120, 220, 240V (50/60 Hz)

120V (Usable 110 - 130V)

60 Hz (for U.S.A. &amp; Canada only)

**Power consumption**

Maximum consumption . . . . . 735 watts

Rated consumption . . . . . 425 watts 500 VA

**Dimensions**

430 mm (16-15/16") W

168 mm (6-5/8") H

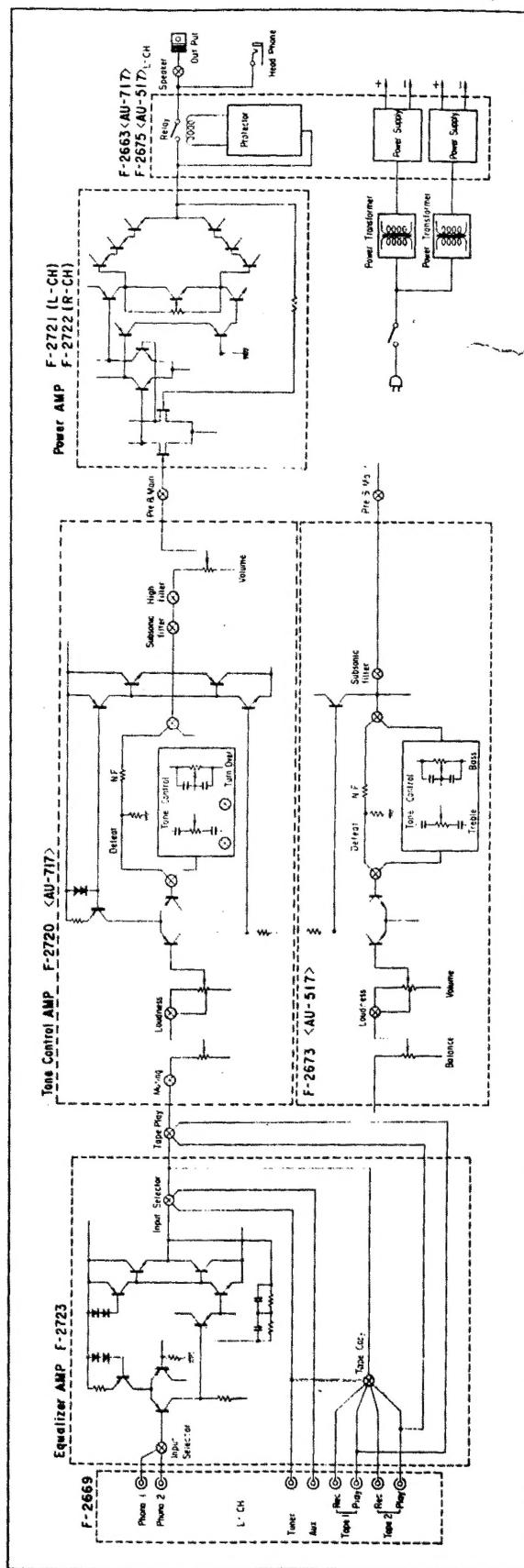
389 mm (15-3/8") D

**Weight**

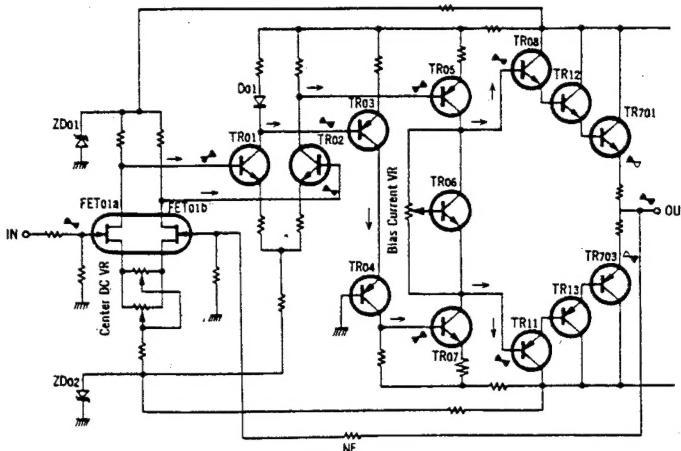
17.8 kg (39.2 lbs) net

19.8 kg (43.7 lbs) packed

# 2. BLOCK DIAGRAM



### 3. ADVANTAGE AND OPERATION OF POWER AMPLIFIER CIRCUITRY SECTION



#### 3-1. Advantage

◇ There is necessity not to decrease the phase response till DC range in order to increase the music signal response of extremely low frequency range. Therefore, this amplifier is employing no capacitors except ones for phase compensation, and has an almost perfect transient characteristics.

◇ The first stage FET (2SK97) is a dual FET of even characteristics and has a large Gm and no-leakage current at normal temperature.

To avoid the influence by temperature drift, such as center voltage (0V) deviation, this FET is used as differential amplifier and operates at cross point which is the optimum point of drain current (at about 3mA) against the temperature drift.

◇ Transistors, TR05 and TR07, the push-pull pre-driver stage functions as current differential amplifier that the stabilized operation can be obtained. In addition, the collector current of these transistors is enough high to make linearity excellent.

◇ Since this Amplifier employs phase advancer circuits [C06, C08, C15, R29, C16 and R30], which have not been frequently used, to compensate the phase characteristics on high frequency range and is also made to have enough

current on each stage to increase the through-rate, the performance on high frequency range is conspicuously improved.

◇ To avoid the voltage deviation, regulated power supply circuit composed of ZD01, ZD02 is employed.

#### 3-2. Operation

The use of differential amplification at first stage dual FET, (FET01, FET02) and connection of the FET to the differential amplifier composed of TR01, TR02, make possible to obtain enough gain and remarkable low distortion.

The output signals of TR01 and TR02 are uniphase. The output signal of TR02 adds to TR05, on the other hand, the output phase of TR01 is inverted by TR03, then, it becomes input signal of TR04 and TR07 which are cascoded connection. The output signals at TR05 and TR07 are inphase that the operation of this stage is push-pull drive and current differential amplification. The power amplifier of the final stage is composed of SEPP (Single Ended Push-Pull) symmetry complementary in 3-stage darlington connection type. TR09 and TR10 are composing current limiter circuit to protect power transistor from break-down by overload.

### 4. ADJUSTMENTS

#### 4-1. Driver Circuit Board Adjustments (See the picture of top view on page 3.)

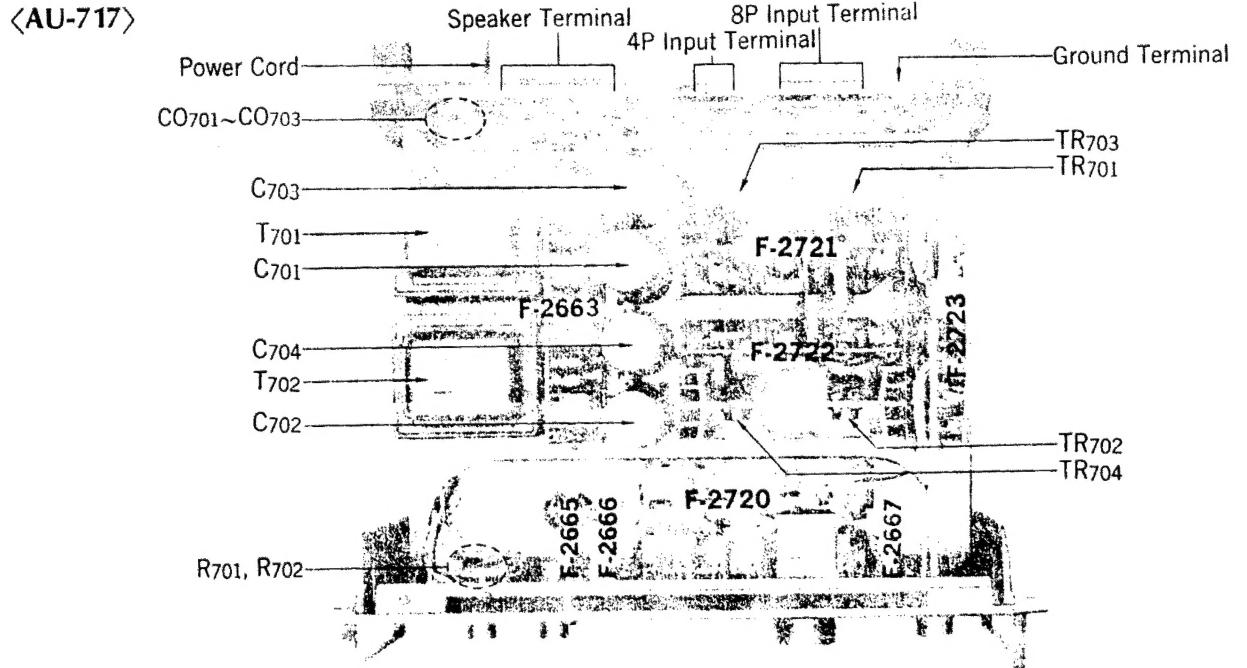
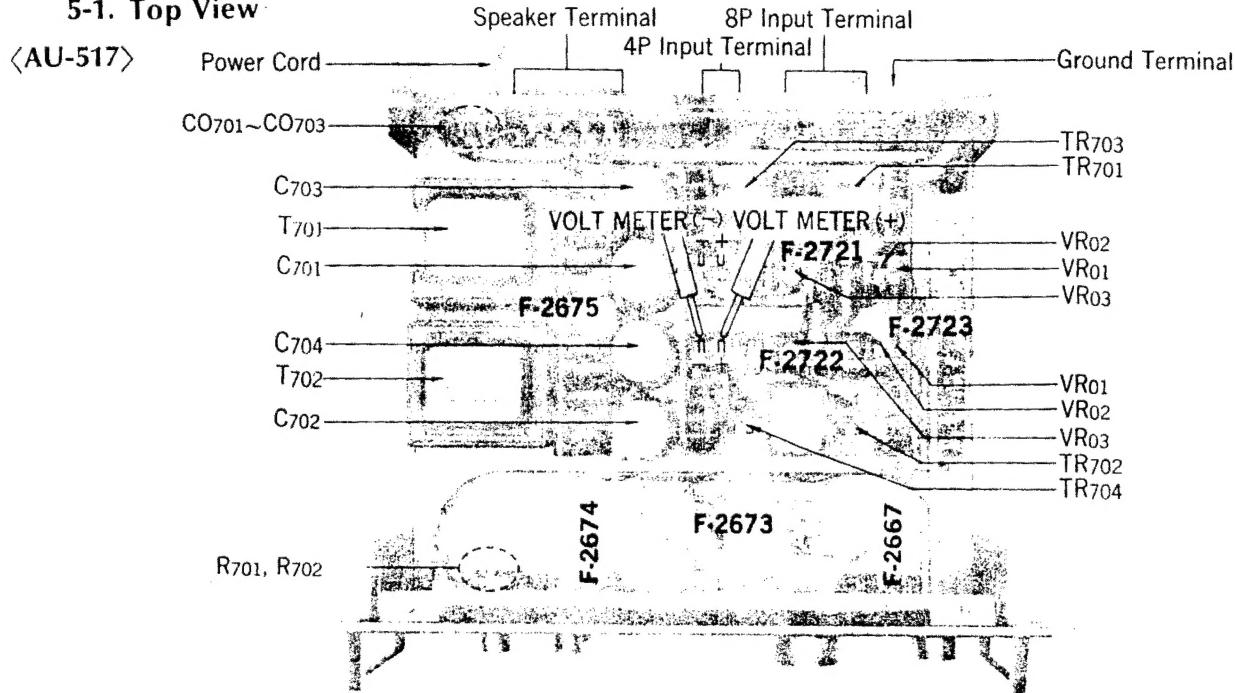
Note: 1. Master Volume.....Minimum  
2. Room Temperature.....

3. For adjustment, run the unit for more than 3 minutes after the power is switched on.

STEP	SUBJECT	EQUIPMENT	MEASURE OUTPUT	ADJUST	ADJUST FOR	CONDITION
1.	DC 0V L-CH	DC Volt Meter	Speaker Terminal	F-2721 VR01, VR02	DC 0V±5mV	• Set VR01 and VR02 to center position. • Then, for the purpose of proceeding the accurate adjustment, set the voltage to 0 volt by VR01 first and VR02 next.
2.	DC 0V R-CH	Same as above	Same as above	F-2722 VR01, VR02	DC 0V±5mV	
3.	Bias Current L-CH	Same as above	TP Terminal (+)(-) of F-2721	F-2721 VR03	DC 20mV±1mV	• By turning VR03 counterclockwise, the bias current is decreased gradually.
4.	Bias Current R-CH	Same as above	TP Terminal (+)(-) of F-2723	F-2722 VR03	DC 20mV±1mV	

## 5. OTHER PARTS

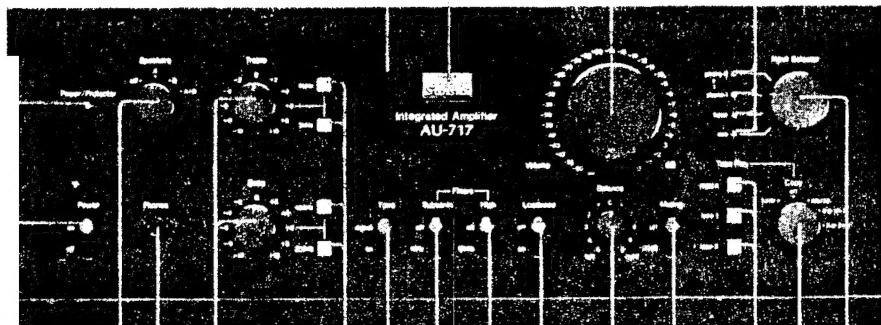
### 5-1. Top View



Parts List &lt;AU-517/717&gt;

Parts No.	Stock No.	Description	Parts No.	Stock No.	Description	Parts No.	Stock No.	Description
C0701	0431701	0.01/ $\mu$ F 150V M.G.		2411240	Voltage Selector SW EU, BS	AU-717 Only		
C0701~714	0607109	1.0/ $\mu$ F 160V M.G.		2230052	Ground Terminal	TR701, 702	0305840-2	2SC1116 R.O.Y. } Transistor
R701, 702	0202221	220Ω 2W N.I.R.	AU-517 Only			TR703, 704	0300520-2	2SA747 R.O.Y. }
C0701~703	2450060	AC Outlet XX	TR701, 702	0306450-2	2SC1403A R.O.Y. } Transistor	C0701~704	0569320	15000/ $\mu$ F 63V E.C.
	5066280	AC Outlet EU, BS	TR703, 704	0300830-2	2SA745A R.O.Y. }	T701, 702	4002580	Power Transformer XX
	2290190	Speaker Terminal	C701~704	0559518	12000/ $\mu$ F 63V E.C.		4002584	Power Transformer EU, BS
	3800010	Power Cord XX	T701, 702	4002590	Power Transformer XX		4002582	Power Transformer UL, CSA
	3800190	Power Cord EU		4002594	Power Transformer EU, BS	FNU	0432290	5A 125V } Power Fuse XX
	3800320	Power Cord BS		4002592	Power Transformer UL, CSA		0434060	10A 250V }
	2300060	Power Fuse Holder XX	F701	0432270	3.5A 125V } Power Fuse XX		0435150	3.15A Power Fuse EU, BS
	2300090	Power Fuse Holder EU, BS		0432500	7A 125V }			
	2410091	Voltage Selector Plug XX		0435140	2.5A Power Fuse EU, BS			
	2410830	Voltage Selector Socket XX						

## 5-2. Front View &lt;AU-717&gt;



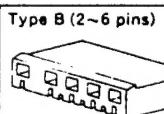
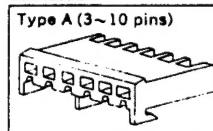
Parts List &lt;AU-517/717&gt;

Parts No.	Stock No.	Description	Parts No.	Stock No.	Description	Parts No.	Stock No.	Description
1 { 5318850 [1015170.1	N-7 Type Knob 250kΩ (MN) × 2 Balance Volume L= 25 P= 5		10 { 5326620 [1131400	Push Switch Knob Push Guide	AU-717 Only	6 { 5326611 [1171130	Lever Switch Knob Lever Switch, Loudnes	
2 { 5318840 [1015230.1	K-7 Type Knob 100kΩ (C) × 2 Treble, Bass Volume L= 25 P= 7		11 2430290	Push Switch, Tape Play	7 { 5326611 [1171130	Lever Switch Knob Lever Switch, Subsonic Filter		
3 { 5318840 [1101780.1	K-7 Type Knob Rotary Switch, Speakers		12 5006670	Bonnet	13 { 5318840 [5318840	H-7 Type Knob H-7 Type Knob		
4 { 5318840 [1190410	K-7 Type Knob Rotary Switch, Tape Copy		13 5336400	Sansui Badge	14 { 0319110 [5507070	Light Emitted Diode Leg		
5 { 5318830 [1190410	I-7 Type Knob Rotary Switch, Input Selector		14 { 0319110 [5507070	Light Emitted Diode Leg	15 { 1090280 [5326611	150kΩ × 2 Stk × 2 Volume L= 25 P= 9		
8 { 5326611 [1171150	Lever Switch Knob Lever Switch, Tone Defeat		15 { 5326611 [1171120	Lever Switch Knob Lever Switch, Loudnes	16 { 5326611 [1171120	Lever Switch Knob Lever Switch, Muting		
9 { 5326611 [1171150	Lever Switch Knob Lever Switch, Power		16 { 5326611 [1171120	Lever Switch Knob Lever Switch, Subsonic Filter	17 { 5326611 [1171130	Lever Switch Knob Lever Switch, High Filter		
	Lever Switch, Power EU. BS		17 { 5326611 [1171130	H-7 Type Knob	18 { 5326721 [1131400	Push Switch Knob Knob Guide		
	[1171150		18 { 5326721 [1131400	150kΩ × 2 Volume L= 25 P= 7	19 7007370	Push Switch, Turn Over		
			19 7007370	Front Panel Ass'y	20 5058730	Front Panel Ass'y		
			20 5058730	Bottom Plate	21 0319110	Bottom Plate		
			21 0319110	Light Emitted Diode				

## ● Figures

## Connectors &amp; Pin Ass'y

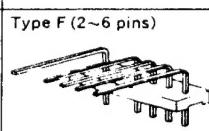
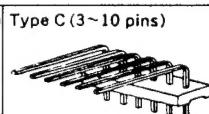
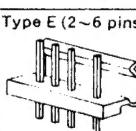
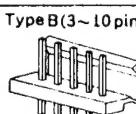
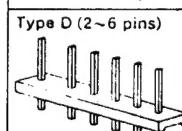
## Connectors



Stock No.
2 Pins 2420450
3 Pins 2420460
3 Pins(RED) 2420650
4 Pins 2420470
5 Pins 2420480
6 Pins 2420490

NOTE: Since stock number of female connectors (type B) with wires are not shown in each parts list of Complete circuit board, please refer to the above parts list when ordering the connector.

## Pin Ass'y



## Abbreviations

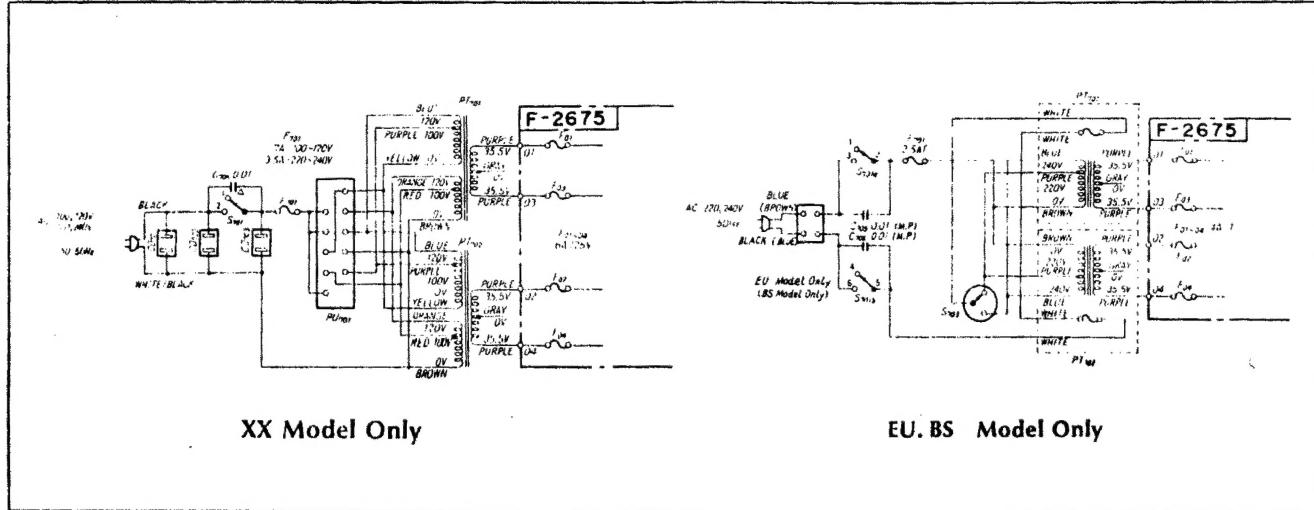
C.R. : Carbon Resistor	E.C. : Electrolytic Capacitor
S.R. : Solid Resistor	BP. E.C.: Bi-Polar Electrolytic Capacitor
Ce.R. : Cement Resistor	C.C. : Ceramic Capacitor
M.R. : Metal Film Resistor	M.I.C. : Mica Capacitor
F.R. : Fusing Resistor	O.C. : Oil Capacitor
N.I.R. : Non-Inflammable Resistor	P.C. : Polystyrene Capacitor
M.C. : Mylar Capacitor	T.C. : Tantalum Capacitor

## 7. SCHEMATIC DIAGRAM

### 7-1. AU-517 Power Supply Section

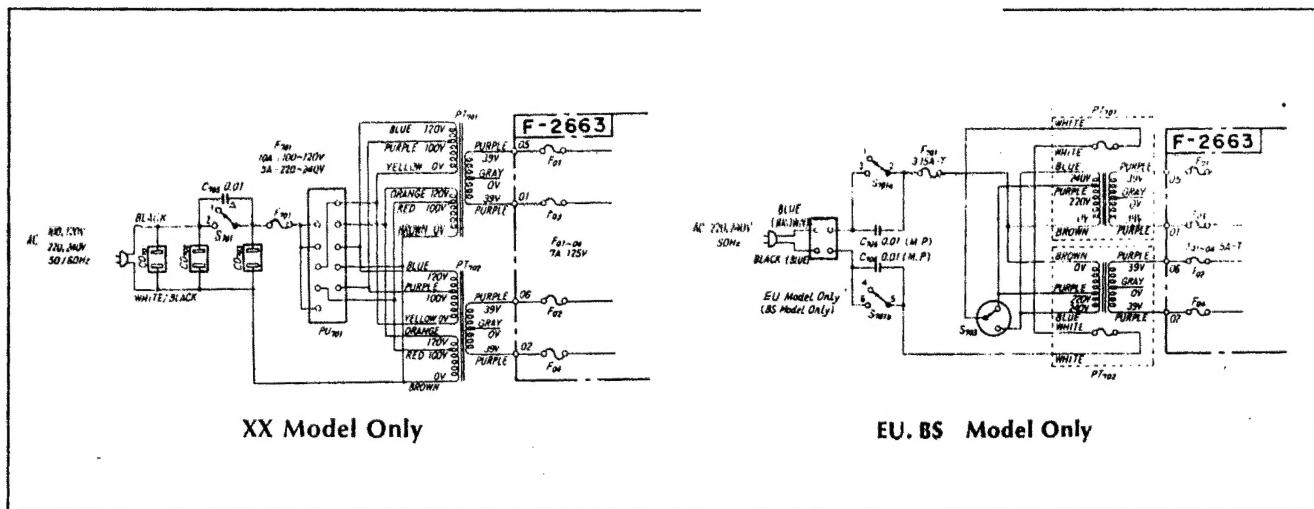
XX EU. BS Model Only

\* La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.  
 \* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten  
 \* Design and specifications subject to change without notice for improvement.



### 7-2. AU-717 Power Supply Section

XX EU. BS Model Only



#### NOTE:

AS to U.L., C.S.A., B.S., ES and XX marked in the Parts Lists, note the followings:

U.L., C.S.A....Approved parts used in the unit which is applicable to the U.S. and Canada under safety standard.

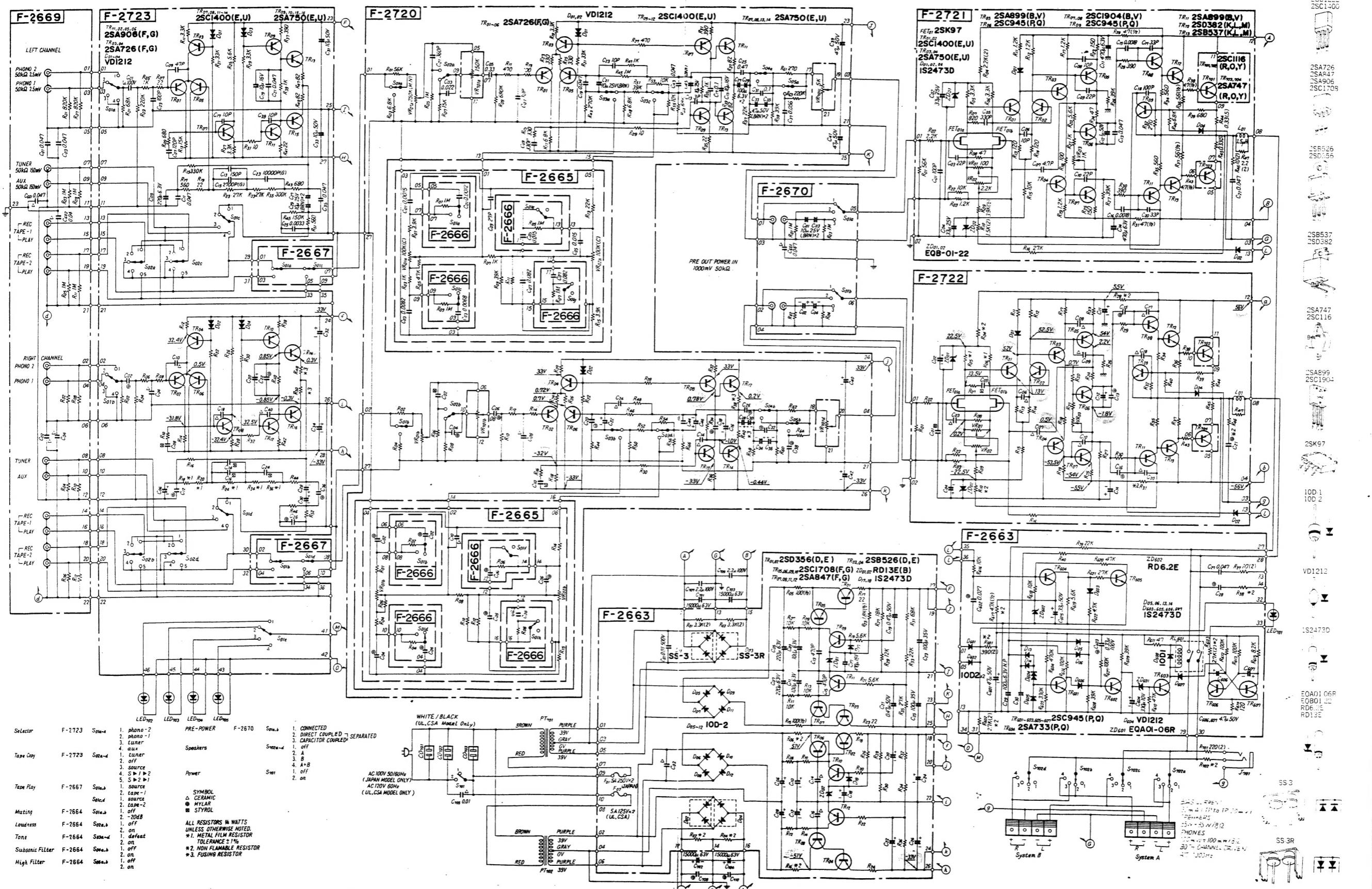
B.S. ....Approved parts used in the unit which is applicable to British under safety requirement.

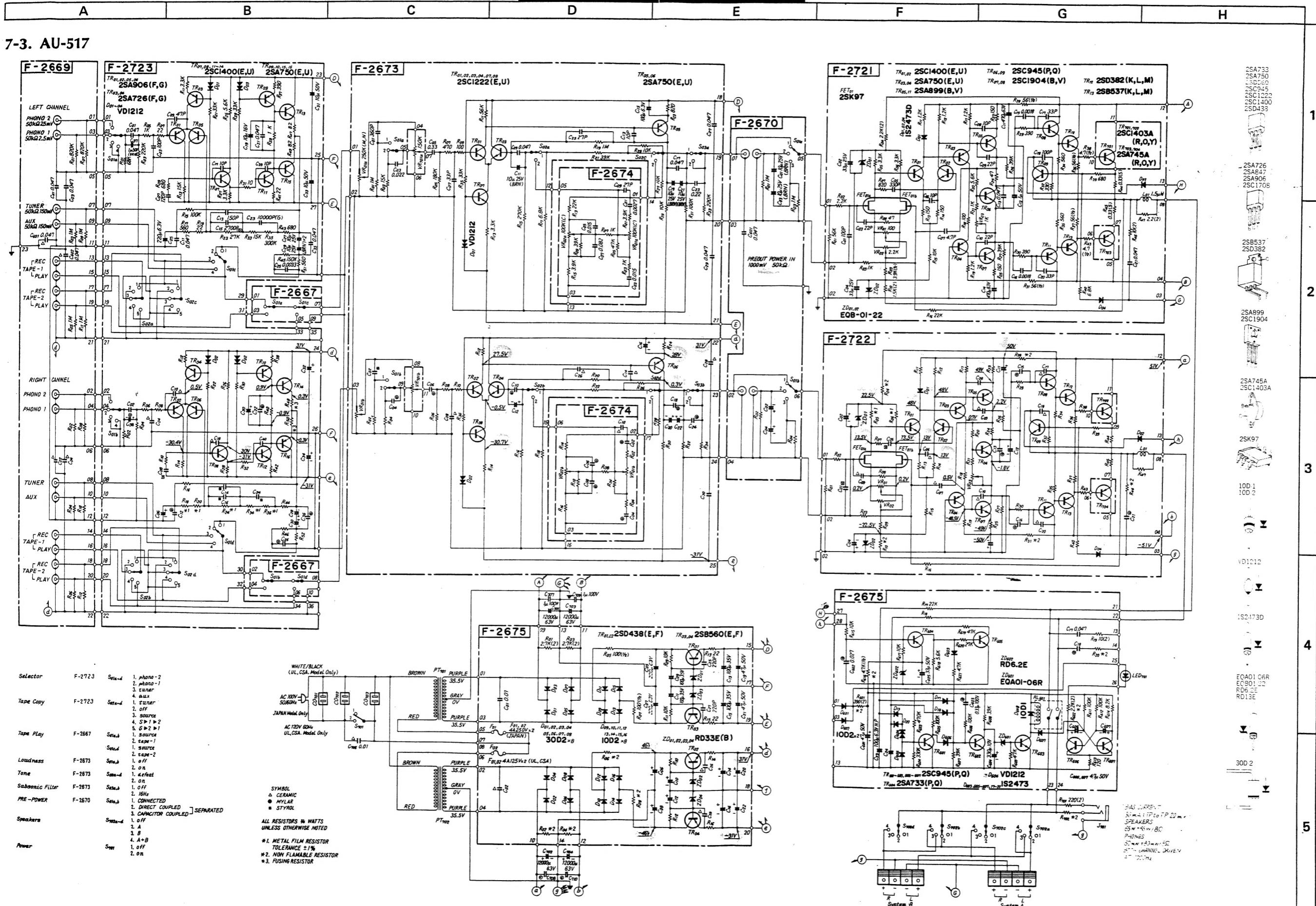
E.U. ....Approved parts used in the unit which is applicable to Sweden, Denmark, Norway, Finland, West Germany, and Switzerland under safety requirement.

XX .....Parts used in the unit which is applicable to other countries excepting mentioned above.

\* In parts lists, parts with no above mark in of "Description" are all the same as XX marked parts.

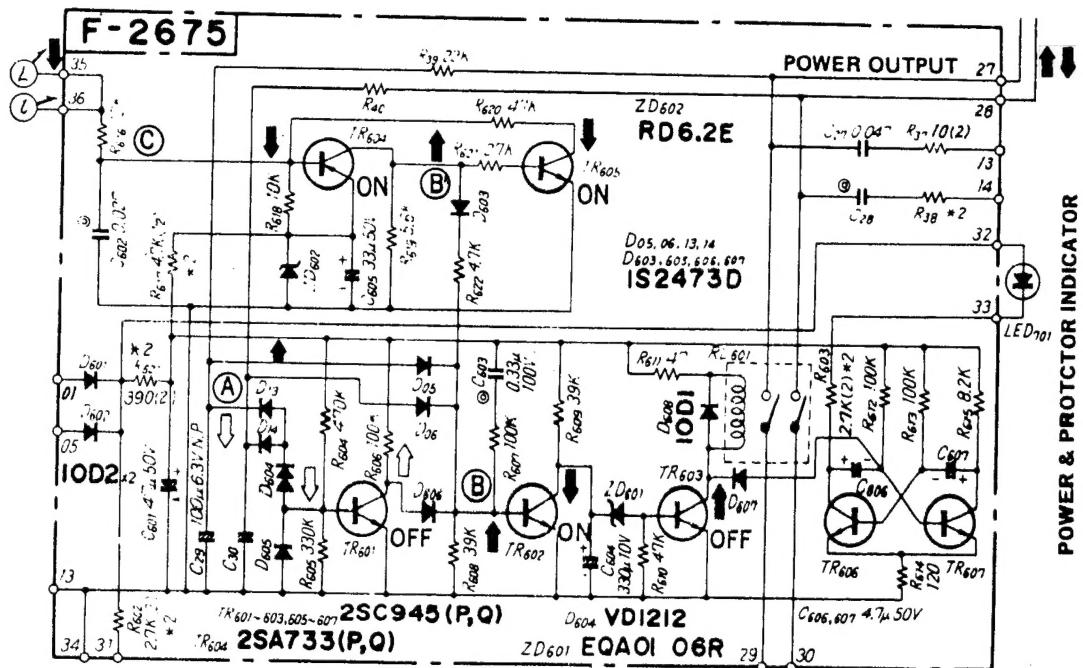
7-4 AU-717





## 8. OPERATION OF PROTECTOR CIRCUIT

This protector circuit contains two functions at abnormal condition; a speaker protector circuit against DC voltage appearing at output, and speaker protector circuit against over-current.



### A. Speaker Protection Circuit against DC voltage appearing at output ④

- When an abnormal negative voltage appears at output ④, TR601 turns off, TR602 turns on and TR603 turns off so that the relay, RL601, keeps off in order to protect loudspeakers from break-down.
- While the relay, RL601, keeps OFF, zero voltage (center voltage) controlling TR607 through D607 will increase, resultly the LED701 as protector indicator, starts flickering.
- When abnormal positive voltage appears at output ④, the voltage is supplied to TR602 directly, and the operation of the protector circuit is same as above mentioned 1.

### B. Speaker Protection Circuit against abnormal over-current

- At the moment when abnormal excessive current flows into power transistors, a transistor (TR09) detecting excessive over-current, on power stage becomes ON.
- Then, DC voltage at ④ decreases, resultly TR604 turns on, and positive certain voltage appears at ④'.
- As mentioned above, when TR602 turns on, the relay, RL601, keeps OFF; a certain positive voltage at ④' turns on TR605 too, resultly collector voltage of TR605 decreases and its collector voltage keeps a certain voltage at ④ simultaneously.
- By keeping a certain DC voltage at ④, the LED701 as protector indicator continues flickering, even though all circuits work completely.

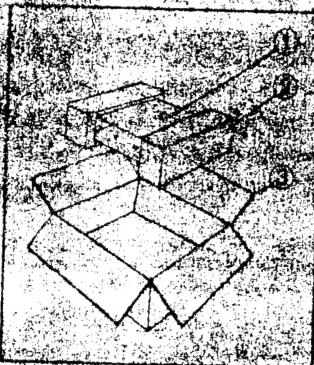
### C. Operation of astable multivibrator

- When control-(bias) voltage is not supplied to the base of TR607 in abnormal condition, TR606 and TR607, on astable multivibrator repeat turning (switching) on and off alternately each other by charging and discharging of capacitors, C606 & C607, resultly, the LED701 as protector indicator continues flickering.
- When the relay, RL601 is turned on, base voltage of TR607 becomes zero volt through D607 and TR606 becomes ON, resultly LED701 as power indicator lights up.

## 9. PACKING LIST

## 10. ACCESSORY PARTS LIST

Part No.	Stock No.	Description	Part No.	Stock No.	Description
1	9116670	Vinyl Cover	2	9205300	Operating Instructions (AU-517)
2	{ 9028020	Styrofoam Packing (L)		9202500	Operating Instructions (AU-717)
	{ 9028030	Styrofoam Packing (R)		9117045	Hexagon Wrench (1.5mm)
3	{ 9009710	Carton Case (AU-717)		9116580	Vinyl Bag For Wrench
	{ 9009708	Carton Case (AU-517)		9237540	Schematic Diagram (AU-517)
				9237550	Schematic Diagram (AU-717)
				9394340	Rock Mounting Adaptor (each)
				9241400	Rear Stand (each)



THE QUALITY OF  
THIS PAGE IS  
THE BEST THAT  
IS AVAILABLE

MEMO

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**Sansui**